

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Brij Bahadur Agrawal, et al.

Serial No.: 09/804,993

Group Art Unit.1764

Filed: March 13, 2001

Examiner: James Arnold Jr.

For: PROCESS FOR THE FIXED BED SWEETENING OF PETROLEUM  
DISTILLATES USING HALOGENATED METAL PHTHALOCYANINE AS A  
CATALYST

Attorney Docket No. U-013307-3

**RESPONSE UNDER 37 CFR 1.116**  
**- EXPEDITED PROCEDURE -**  
**EXAMINING GROUP 1642**

Commissioner for Patents

P.O. Box 1450

Arlington, Virginia 22313-1450

Mail Stop AF

**RESPONSE TO TELEPHONE NOTICE OF BONA FIDE BUT NON-**  
**COMPLIANT RESPONSE TO FINAL REJECTION OF MAY 30, 2003**

## CERTIFICATE OF MAILING /TRANSMISSION(37 CFR 1.8a)

I hereby certify that this correspondence is, on the date shown below, being:

## MAILING

deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to  
the Assistant Commissioner for Patents, Washington, D.C. 20231

Date: January 12, 2004

## FACSIMILE

X transmitted by facsimile to the Patent and Trademark Office to fax number (571) 277-1443

Signature

John Richards

(type or print name of person certifying)

**Listing of Claims**

1. (currently amended)

A process for fixed bed sweetening of petroleum distillates using ~~a dichloro- or dibromo- cobalt or iron halogenated-metal~~ phthalocyanine as a catalyst which comprises impregnating the catalyst on an activated charcoal bed by circulating an alcoholic alkaline solution of the catalyst through said activated charcoal bed until a colourless solution is obtained in the effluent, thereby obtaining a catalyst impregnated charcoal bed, passing the petroleum distillate through said catalyst impregnated charcoal bed along with air or oxygen at a temperature in the range 20°C to 100°C at a pressure in the range 1 kg/cm<sup>2</sup> to 15 kg/cm<sup>2</sup> with a liquid hourly space velocity in the range 1 hr<sup>-1</sup> to 15 hr<sup>-1</sup> with continuous or intermittent injection of alkali solution of concentration in the range 0.5 - 20%, to obtain the desired low mercaptan level petroleum distillates

2. (Previously presented)

A process as claimed in claim 1, wherein the alcoholic alkaline solution used is selected from methanolic and ethanolic solution of sodium hydroxide.

3 (currently amended)

A process as claimed in claim 1 wherein said ~~halogenated-metal~~ ~~phthalocyanine~~ catalyst used is selected from dichloro cobalt phthalocyanine and dibromo cobalt phthalocyanine.

4. (currently amended)

A process as claimed in claim 1 wherein the concentration of catalyst used in the fixed bed is in the range 0.1 wt% to 1 wt% of activated charcoal.

5 (currently amended)

A process as claimed in claim 1, wherein ~~the halogenated-metal~~ said ~~dichloro- or dibromo- cobalt or iron halogenated-metal~~ phthalocyanine is prepared by treating the cobalt or iron

phthalocyanine with a halogenating agent selected from the group comprising chlorine, bromine, iodine, thionyl chloride, sulphuryl chloride, phosphorus pentachloride, phosphorus oxychloride, phosphorus pentabromide and phosphorus trichloride.

- 6 (Previously presented) A process as claimed in claim 1, wherein the petroleum distillate used is selected from diesel, kerosine and FCC gasoline.
- 7 (Previously presented) A process as claimed in claim 1 wherein the temperature is about in the range 20°C to 50°C.
- 8 (Previously presented) A process as claimed in claim 1, wherein the pressure is about in the range 5 kg/cm<sup>2</sup> - 8 kg/cm<sup>2</sup>.
- 9 (Previously presented) A process as claimed in claim 1, wherein the liquid hourly space velocity (LHSV) is about in the range 1 hr<sup>-1</sup> to 6 hr<sup>-1</sup>.
- 10 (Previously presented) A process as claimed in claim 2, wherein ~~said halogenated metal phthalocyanine~~ catalyst used is selected from dichloro cobalt phthalocyanine and dibromo cobalt phthalocyanine.
- 11 (Previously presented) A process as claimed in claim 2, wherein the concentration of catalyst used in the fixed bed is in the range 0.1 wt% to 1 wt% of activated charcoal.
- 12 (Previously presented) A process as claimed in claim 3, wherein the concentration of catalyst used in the fixed bed is in the range 0.1 wt% to 1 wt% of activated charcoal.
13. (Currently amended) A process as claimed in claim 2, wherein the ~~halogenated metal~~

said ~~dichloro- or dibromo- cobalt or iron~~ halogenated metal phthalocyanine is prepared by treating the cobalt or iron phthalocyanine with a halogenating agent selected from the group comprising chlorine, bromine, iodine, thionyl chloride, sulphuryl chloride, phosphorus pentachloride, phosphorus oxychloride, phosphorus pentabromide and phosphorus trichloride.

14 (Currently amended)

A process as claimed in claim 3, wherein ~~the halogenated metal~~ said ~~dichloro- or dibromo- cobalt or iron~~ halogenated metal phthalocyanine is prepared by treating the cobalt or iron phthalocyanine with a halogenating agent selected from the group comprising chlorine, bromine, iodine, thionyl chloride, sulphuryl chloride, phosphorus pentachloride, phosphorus oxychloride, phosphorus pentabromide and phosphorus trichloride.

15 (Currently amended)

A process as claimed in claim 4, wherein ~~the halogenated metal~~ said ~~dichloro- or dibromo- cobalt or iron~~ halogenated metal phthalocyanine is prepared by treating the cobalt or iron phthalocyanine with a halogenating agent selected from the group comprising chlorine, bromine, iodine, thionyl chloride, sulphuryl chloride, phosphorus pentachloride, phosphorus oxychloride, phosphorus pentabromide and phosphorus trichloride.

16. (Previously presented)

A process as claimed in claim 2, wherein the petroleum distillate used is selected from diesel, kerosine and FCC gasoline.

17 (Previously presented)

A process as claimed in claim 2, wherein the petroleum distillate used is diesel.

- 18 (Previously presented) A process as claimed in claim 2, wherein the petroleum distillate used is FCC gasoline.
- 19 (Cancelled)
- 20 (Cancelled)
- 21 (Previously presented) A process according to claim 1, wherein said injected alkali solution comprises sodium hydroxide.
- 22 (New) A process as claimed in claim 1 wherein said dichloro- or dibromo- cobalt or iron phthalocyanine is unsulfonated.
- 23 (New) A process as claimed in claim 1 wherein said dichloro- or dibromo- cobalt or iron phthalocyanine is insoluble in alkali or hydrocarbon during the sweetening process.